

Remarks

The Examiner is thanked for the review of the patent application. Claims 1-4, 8, and 14-15 were amended. Claim 20 has been canceled. New claims 21 and 22 have been added. Claims 1-19 and 21-22 are pending in the application.

Rejections under 35 U.S.C. § 112

Claims 1-20 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed. Claims 1-4, 8, and 14-15 have been amended to correct typographical errors and to better define that which the Applicants consider to be the invention. Claim 1, as amended, clearly defines the feature of cleaning the cleaning sites. Claim 2, as amended, clearly defines the operation of aligning the cleaning sites with contact regions of the chuck with respect to the operations of claim 1. Claims 3-4, as amended, clearly define exemplary embodiments of the chuck and do not contradict claim 2. Claim 8, as amended, clearly defines a system with the relationships between the features which include a cleaning controller and an apparatus that cleans the cleaning sites on the wafer. Applicants note that the apparatus for cleaning the cleaning sites is described within the specification of the application such as, for example, a laser (e.g., laser cleaning module) or a megasonic device (e.g. megasonic wand). Therefore, Applicants respectfully submit that claims 8-14 are definite. Claim 15, as amended clearly define the cleaning of the coordinates of the specific particles.

Applicants respectfully submit that claims 7, 13, 19, and 21 which include the feature of a megasonic wand are definite because a megasonic wand is known to those skilled in the art.

Specifically, one skilled in the art would understand that a megasonic wand, in one example, includes a nozzle surrounding a transducer where, in operation, the transducer can impart megasonic energy to a stream of fluid moving which in turn can impart megasonic energy to a wafer.

Therefore, Applicants respectfully submit that all of the pending claims are definite and respectfully request that the section 112 rejection be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hiatt et al. (U.S. Patent No. 5,963,315)("Hiatt") in view of Yin et al. (U.S. Patent No. 5,865,901)("Yin") and Boszormenyi et al. (U.S. Patent No. 6,394,105)("Boszormenyi"). These rejections are respectfully traversed. As will be fully explained, the cited prior art references individually or in combination do not disclose or suggest each and every feature of independent claims 1, 8, and 15 as required to raise a prima facie case of section 103 obviousness. At the very least, the cited prior art references do not disclose the defining of cleaning sites which are regions of the wafer that contact a chuck and cleaning those cleaning sites,

With respect to the Hiatt reference, the Office indicates that Hiatt does not disclose or suggest the optimization of the cleaning by preferential localized cleaning of specific areas. (See, page 5, paragraph 7 of Office Action) Therefore, to raise a prima facie case of section 103 obviousness, the Yin reference and/or the Boszormenyi references must disclose or suggest defining cleaning sites which are regions of the wafer that contact a chuck and cleaning those cleaning sites. Applicants respectfully submit that Hiatt, Yin, and Boszormenyi do not disclose or suggest these features.

With respect to the Yin reference, Yin teaches cleaning contaminants by locating, mapping and using an impinging stream such that the contaminant substance is positioned in the

path of the impinging stream. In contrast, the claimed inventions include defining a region of a wafer which contact a chuck and cleaning those regions. Applicants respectfully submit that Yin makes no mention of defining a wafer region that contacts a wafer let alone cleaning such a region. Therefore, as can be seen, the Yin reference does not disclose, teach, or suggest defining a region of the wafer that contacts a chuck and cleaning such a region. Consequently, Applicants respectfully submit that the Yin references does not disclose or suggest the discussed features of the claimed inventions.

With respect to the Boszormenyi reference, Boszormenyi only teaches a generic use of laser to clean wafers. The claimed inventions as discussed above, include the features of defining a region of a wafer which contact a chuck and cleaning those regions. In contrast, Boszormenyi does not even mention or suggest usage of a chuck in wafer processing let alone defining and cleaning a region of the wafer that contacts the wafer. In fact, Boszormenyi clearly teaches that the entire surface of a wafer is required to be cleaned. The Office is respectfully directed to column 2, lines 19-22 which states as follows:

Since the entire surface of every workpiece needs to be cleaned and not just samples the tool allows 100% inspection which would be cost prohibitive if the inspection was to carried out off-line. (Emphasis Added).

Therefore, Boszormenyi requires that the entire surface of wafer be cleaned. Therefore, Applicants respectfully submit that Boszormenyi does not include defining a region of a wafer which contact a chuck and cleaning those regions.

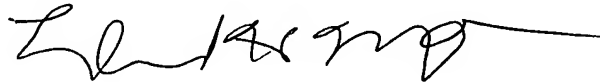
Therefore, Applicants respectfully submit that the Hiatt, Yin, and Boszormenyi references, individually or in combination, do not teach or suggest all of the features of the claimed inventions. As a result, Applicants respectfully submit that Office has failed to raise a prima facie case of obviousness. Consequently, Applicants respectfully request that the section 103 rejections with respect to independent claims 1, 8, and 15 be withdrawn. In addition, the

dependent claims are submitted to be allowable for at least the reasons discussed above for the independent claims.

In addition, new claims 21 and 22 have been added which define systems for cleaning the backside of the wafer that includes using a laser and a megasonic wand respectively to clean regions of the wafer that contact the chuck during a semiconductor process. Applicants respectfully submit that claims 21 and 22 are allowable for at least the reasons described above.

In view of the foregoing, Applicants respectfully submit that the pending claims are in condition for allowance and therefore respectfully request a notice of allowance. Accordingly, a notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 749-6900. ext. 6927. If any additional fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. LAM2P317). A copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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